



Between the Lines

Mark Your Calendars

NHTSA Drive Sober or Get Pulled Over Crackdown
December 13–January 1, 2014

Transportation Research Board Annual Meeting
Washington, D.C.
January 12–16, 2014

National Sheriffs' Association Winter Conference
Washington, D.C.
January 20–25, 2014

IACP — DRE Section 20th Annual Training Conference on Drugs, Alcohol and Impaired Driving
Phoenix, AZ
July 28–30, 2014

2013 GHSA Annual Meeting Highway Safety & Technology: Safely Navigating the Road Ahead
San Diego, CA
August 25–28

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A New High in the Colorado Rockies

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In 1937, Denver police, in conjunction with the Federal Bureau of Investigation, made the nation's first arrests for distribution and possession of marijuana under the newly enacted Marijuana Tax Act. Move forward 77 years, starting January 1, 2014, retail marijuana stores will open where a person at least 21 years old can walk in, show a Colorado ID, and walk out with an ounce of marijuana. Denver police will not be able to arrest the buyer or seller of marijuana. That's because on January 1, 2014, distribution, possession, and use of marijuana became legal in Colorado, as a result of voters who overwhelmingly supported legalization of marijuana for recreational use. In 2012, Colorado voters passed Amendment 64, an amendment to the state's constitution that will create the nation's first legal retail and wholesale marijuana industries.¹ Notwithstanding, it remains a federal crime to manufacture, distribute, possess, or use marijuana — one which the federal government may choose to investigate and prosecute at will.²

While the conflict of laws may create some legal issues, Colorado prosecutors are grappling with a multitude of concerns surrounding implementation of the new law, the most pressing being traffic safety enforcement. Traffic safety concern centers on the potential increase in the number of marijuana-impaired drivers and concomitant injuries or fatalities that will likely follow. Though law enforcement officers and prosecutors routinely handle crash investigations and prosecutions, the new law presents challenges on everything from articulating reasonable suspicion to proving guilt beyond a

reasonable doubt. Some issues in prosecuting cases involving recreational use of marijuana and operating a motor vehicle have already surfaced in cases involving medical marijuana. Nevertheless, recreational use cases create some additional and unique challenges that traffic safety professionals need to address to ensure roadways are safe while respecting the individual's right to personal use of marijuana.

How does marijuana impair?

Advocates argue that drivers under the influence of marijuana are safer because they drive slower, ergo they must be safer. Compared to research regarding the effects of alcohol on impairment, research regarding the effects of marijuana is still in its infancy. Even so, there has been a fair amount of research over the last 15–20 years that sheds light on how marijuana actually impairs.³ The majority of the studies—mostly from Europe—have evaluated both crash data as well as conducted laboratory studies on human subjects, including live and simulated driving exercises. A recent review of the literature on the effects of marijuana use on an individual's driving skills reveals that there is evidence of a twofold increase in the risk of having a crash after the individual smokes marijuana.⁴ Other studies indicate that marijuana affects the user's critical tracking and divided attention tasks, including highly automated behaviors, diminishes short term and working memory, and correlates with lane deviation and failure to stop appropriately.⁵ Mortality studies have shown that marijuana impairment increases crash risk between two and seven times and

studies on chronic use indicates that users are able to compensate for some but not all impairing effects.⁶ Therefore, the peer-reviewed research provides ample support that marijuana impairs driving, increases fatal crash risk, and the increased risk of having an accident is not completely averted by tolerance in chronic users.⁷

Increased drug use leads to increased fatalities.

To make a persuasive argument that marijuana in fact poses a traffic safety concern, it may reasonably be argued that one only need look at the statistics relating to traffic fatalities to make that conclusion. Since 1975, when the National Highway Traffic Safety Administration (NHTSA) created the Fatality Analysis Reporting System (FARS), states have been documenting and collecting data, including drug results, to better ascertain the proximate cause of traffic fatalities.⁸ Despite some systemic limitations of the data, it remains a useful tool regarding trends and overall rates of deaths attributed to crashes. One limitation involves the collection of FARS data because it is conditioned upon law enforcement agencies reporting the data to the local FARS collection unit. If law enforcement agencies fail to properly categorize or report the data, underreporting may occur.

In Colorado, blood may be collected from an at-fault driver if the driver was killed or where there is probable cause that the driver committed a crime, and not just any crime, but rather a serious offense such as vehicular assault or vehicular homicide.⁹ Only about 40 percent of at-fault drivers of fatal crashes have their blood taken in Colorado. When autopsies of fatal drivers and victims are conducted, often there are no standardized rules for how fluids are collected, tested, and reported. Understanding the limitations in data, in Colorado there has been an upward trend in the number of drivers responsible for fatal crashes that have drugs, and more specifically marijuana, in their systems, from 15.9 percent in 2006 to 23.7 percent in 2011.¹⁰

Enforcement challenges.

High-visibility enforcement is commonly understood to be one of the best tactics in combating alcohol-impaired driving. Applying that same tactic to marijuana-impaired driving cases will present big challenges. While law enforcement, particularly the Drug Recognition Expert (DRE) program, has recognized the challenge of drug-impaired driving, the ability of this small group to effectively combat the growing number of people driving under the influence of drugs, including illegal, legal recreational, and prescription, is quickly exceeding what their numbers can handle. Numbers alone dictate that the average patrol officer needs to be better equipped to handle and recognize the drug-impaired driver. The continued development and expansion of the ARIDE training program is a step toward better awareness and enforcement, but it's only part of the puzzle. Another piece of the puzzle includes prosecutors and toxicologists who will be tasked with providing additional training, testing, and litigation. Therefore, prosecutors and toxicologists must better equip themselves with the resources necessary to handle the increase, including technological advances and skills in presenting and testifying on the effects of marijuana and how it impairs drivers.

Per se legislation.

One response to the difficulty in proving marijuana impairment is per se legislation. Washington State adopted five nanogram per

se legislation as part of Initiative 502, the legislation that created legal marijuana in that state, and similar legislation was passed by the legislature in Montana. The five nanogram per se level appears to have been a political compromise to balance the desire for a per se level while offsetting the concern that medical marijuana users would be unjustly investigated and prosecuted due to residual levels. In Colorado, per se legislation failed multiple times so the compromise was a permissible inference. Therefore, the five nanogram inference is a starting point, but it by no means is the only level affecting impairment and prosecutors may have to prove impairment at lower levels. Several studies show that marijuana impairment begins at a much lower level, beginning around one to two nanograms. (See endnotes).

Further, it is important to understand how marijuana is processed through the body and how this affects investigations and subsequent prosecutions. Delta 9 THC is the active impairing component of marijuana and remains present in the body for only two to four hours on average. Delta 9 THC can only be detected in blood. Contrast this to THC-COOH which is the inactive, non-impairing metabolite that can remain present in an individual for up to 30 days. THC-COOH can be detected in both blood and urine.

When marijuana is smoked an individual can go from having zero to well over a hundred nanograms of marijuana in his or her system within minutes and then it drops precipitously to where it can be back down to less than 20 nanograms within an hour. Because law enforcement investigations take time, it is imperative if an officer has probable cause to arrest someone for suspicion of driving under the influence of drugs that he or she obtains a blood test immediately. Blood is the preferred method for testing because it is a snapshot of the individual's toxicology at or around the time of driving. For many years, urine testing was the preferred method, mostly because of cost. Blood however provides better evidence because it can show whether the individual was under the influence of Delta 9 THC, the impairing ingredient. Law enforcement and prosecutors should not entirely discount urine testing but understand that it is indicative of historical use and may not show that a suspect was under the influence of the active impairing component of marijuana at or around the time of driving. It can be used, however, to confirm that an individual had that drug in his or her system, and may help corroborate other evidence.

Proving marijuana-impaired driving.

The challenge in actually proving a marijuana-impaired driving case is as much about perception as it is about truth and science. Despite increased access and use of marijuana, the number of individuals who have tried marijuana is estimated to be about 48 percent of the population.¹¹ However, frequent users of marijuana constitute a much smaller portion of that number. When faced with a question as to whether a driver was impaired by marijuana, most jurors do not have a point of reference for the drug's effects. Contrast that to a case involving alcohol impairment where the driver admitted to drinking ten beers or the government demonstrated that he had a BAC of .15, the majority of jurors have a better understanding of the significance of those numbers.

Presented in an opening statement that the driver admitted to taking three "hits" and had a toxicology result of 10 nanograms of Delta 9 THC (the impairing substance in marijuana), the jury, without additional explanation for what that means,

likely will not be able to arrive at any appreciable conclusions. Instead, the jury will look deeper into the case to ask themselves whether this person was really too impaired to drive a car. Based on observation and anecdotes, Colorado juries have struggled to convict people of marijuana-impaired driving, and if they do convict, find the lesser offense of driving while ability impaired. In part, it would seem that juries and judges have an expectation of impairment that mirrors that of alcohol and when they don't see that type of impairment, they conclude the person was safe to drive. The reality is that people under the influence of marijuana do not necessarily "look or act drunk," rather the impairment they suffer may manifest itself first by diminishing mental faculties, which can lead to a loss in precision motor skills as described in the studies. Therefore, demonstrating mental impairment and how it relates to safety is a much higher bar in these cases and becomes one of the biggest challenges for law enforcement and prosecutors.

Because recreational use of marijuana in Colorado is new, only time and experience will aid in developing appropriate responses and effective tactics to cope with marijuana-impaired driving. While public education will be a critical piece, prosecutors and law enforcement officers must recognize some of the potential defense strategies and arguments and document the reasons for arrests in greater detail. The fundamental concept of impairment-driving cases is impairment and prosecutors must focus on it rather than simply positive test results. Prosecutors may likely need toxicologists, DREs, or other experts to explain the difference between low level effects of marijuana and the case before them to juries. This is not something that is going to go away or contract. States, even without legal marijuana, need to prepare by developing effective law enforcement and prosecution training and tactics, the collection of accurate data, a better understanding of marijuana the drug, and public education based on current and future science.

Endnotes

- 1 Amendment 64, Voter Initiative, was ratified by the electorate at the general election on Nov. 6, 2012, effective upon the proclamation of the vote by the governor, Dec. 10, 2012. Const. Art. 18, § 16
- 2 21 USC §§ 841, 844 (2013).
- 3 Cognitive measures in long-term cannabis users, P. Hanison MD, et al., *J Clin Pharmacol*. 42, 41S-47S, 2002; The incidence of drugs in drivers killed in Australian road traffic crashes, O. Drummer, et al., *Forensic Science International*, 34, 154- 162, 2003; The relationship between performance on the standardized field sobriety tests, driving performance and the level of delta 9-tetrahydrocannabinol (THC) in blood, K. Papafotiou, J.D Carter, C. Stough, *Forensic Science International*, 155, 172-178, 2005; Acute marijuana effects on human risk taking, S. Lane, et al., *Neuropsychopharmacology*, 30, 800-809, 2005; Developing science-based per se limits for driving under the influence of cannabis (DUIC): Findings and recommendations by an expert panel, F. Grotenhermen, et al., September 2005; Estimating the time of last cannabis use from plasma Delta 9 - tetrahydrocannabinol and 11-nor-9-carboxy-delta9-tetrahydrocannabinol concentrations, M. Huestis, A. Barnes, M. Smith, *Clinical Chemistry*, 51:12, 2289-2295, 2005; Cognition and motor control as a function of Delta 9 -tetrahydrocannabinol in serum and oral fluid: limits of impairment, J. Ramaekers, et al., *Drug Alcohol Depend*, 85, 114-122, 2006; Estimating time of last oral ingestion of cannabis from plasma THC and THC-COOH concentrations, M. Huestis, *The Drug Man*, 28, 4, 2006; Driving under the influence of cannabis: a 10-year study of age and gender differences in the concentrations of tetrahydrocannabinol in blood, A. Jones, et al., *Addiction*, 103, 452-461, 2008; Human cannabinoid pharmacokinetics, M. Huestis, *Chemistry & Biodiversity*, 4, 1771-1804, 2007; Implications of plasma Delta 9- tetrahydrocannabinol, 11-hydroxy-THC, and 11-nor-9-carboxy-THC concentrations in chronic cannabis smokers, E. Karschner, et al., *Journal of Analytical Toxicology*, 33, 2009; Do Delta 9- tetrahydrocannabinol concentrations indicate recent use in chronic cannabis users?, E. Karschner, et al., *Addiction*, 104, 2041-2048, 2009; Delta 9 - tetrahydrocannabinol (THC), 11-hydroxy-THC, and 11-nor-9-carboxy-THC plasma pharmacokinetics during and after continuous high-dose oral THC, E. Schilke, et al., *Clinical Chemistry*, 55:12, 2180-2189, 2009; Dose related risk of motor vehicle crashes after cannabis use: an update, *Drugs, Driving and Traffic Safety*, J. Verster, S. Pandi-Perumal, J. Ramaekers and J. de Gier Editors, 2009; Impairment due to cannabis and ethanol: clinical signs and additive effects, J. Bratmess, et al., *Addiction*, 106, 1080-1087, 2010; Acute cannabis consumption and motor vehicle collision risk: systematic review of observational studies and meta-analysis, M. Asbridge, et al., *BMJ*, 344 e536 1-9, 2012; Psychomotor Function in Chronic Daily Cannabis Smokers during Sustained Abstinence, W. Bosker, et al., *PLOS one* 8(1): e53127, 2013; Reversible and regionally selective downregulation of brain cannabinoid CB 1 receptors in chronic daily cannabis smokers, J. Hirvonen, et al., *Molecular Psychiatry*, 17, 642-649, 2013; Impact of Prolonged Cannabinoid Excretion in Chronic Daily Cannabis Smokers' Blood on Per Se Drugged Driving Laws, M. Bergamaschi, et al., *Clinical Chemistry*, 59:3 519-526, 2013.
- 4 Cannabis Effects on Driving Skills, R. Hartman, M. Huestis, *Clinical Chemistry*, 59:3 478-92, 2013.
- 5 Dose related risk of motor vehicle crashes after cannabis use: an update, *Drugs, Driving and Traffic Safety*, J. Verster, S. Pandi-Perumal, J. Ramaekers and J. de Gier Editors, 2009; Psychomotor Function in Chronic Daily Cannabis Smokers during Sustained Abstinence, W. Bosker, et al., *PLOS one* 8(1): e53127, 2013; Reversible and regionally selective downregulation of brain cannabinoid CB 1 receptors in chronic daily cannabis smokers, J. Hirvonen, et al., *Molecular Psychiatry*, 17, 642-649, 2013; Impact of Prolonged Cannabinoid Excretion in Chronic Daily Cannabis Smokers' Blood on Per Se Drugged Driving Laws, M. Bergamaschi, et al., *Clinical Chemistry*, 59:3 519-526, 2013; Acute cannabis con-

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- 8 U.S. Department of Transportation. *Report to Congress NHTSA's Crash Data Collection Programs*, Virginia: National Technical Information Service, April 2010. (National Highway Traffic Safety Administration Bulletin DOT HS 811 337). <http://www-nrd.nhtsa.dot.gov/Pubs/811337.pdf> (accessed 12/20/2013).
- 9 C.R.S.A. § 42-4-1301.1
- 10 <http://www.coloradodot.info/programs/alcohol-and-impaired-driving/druggeddriving/drugged-driving-statistics.html>
- 11 Marijuana Use Increased Over the Last Decade. Pew Research Center survey. <http://www.pewresearch.org/daily-number/marijuana-use-increased-over-the-last-decade/> (accessed 12/21/2013).



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